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## Social Table Design For Culinary Enjoyment

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# **SOCIAL TABLE DESIGN FOR CULINARY ENJOYMENT**

by

Jiekun Qian

A Thesis Submitted in Partial Fulfillment of the Requirements for the  
Degree of Master of Fine Arts in Industrial Design

Industrial Design, School of Design

College of Imaging Arts & Sciences

Rochester Institute of Technology

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# ABSTRACT

The purpose of this thesis was to design a new culinary experience to gather people together and make the cooking and dining activities more socialized, interactive and joyful.

A-Round is a modular culinary table that can satisfy user's specific needs in regard to different social aspects by changing the elements of the middle part of the table (burner top, storage tray, serving tray, table top, etc.). The round shape semantically reduces the distance between people and gathers them together. By changing behaviors of users and offering resources around the dining area, this product not only functionally improves the culinary process, but also emotionally enhances the cooking and dining experience.

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### **REFERENCE**

# **1.0 GENERAL UNDERSTANDING OF THE KITCHEN**

## **1.1 The development of the kitchen**

People think of the kitchen as the social center of their home, where friends and family can gather together not just to eat dinner but to be involved in many different activities. However, this was not always the case. Through the years, the functions of the kitchen have seen a lot of changes.

In ancient times, the kitchen was a place that was purely functional, a place used to cook and store food. People did not hang out or spend more time than necessary in their kitchen, mainly because it tended to be a dark and smoky place because open flames were the main heat source.

In the 19<sup>th</sup> century, the technological advances of industrialization were a huge influence on kitchen design, and they started to become neat areas that welcomed people to stay longer. After the 20<sup>th</sup> century, with the development of work process optimization, the Frankfurt Kitchen was released to the world. This milestone design was intended to optimize kitchen workflow to make the cooking process more efficient and lower the cost of kitchen setups. During this period of time, kitchen design became more and more utilized.

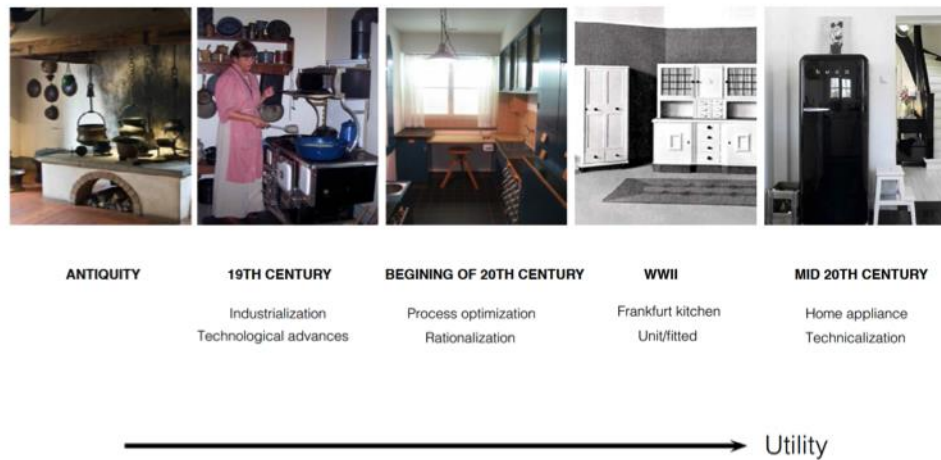


Fig. 1-1-1 the development of the kitchen

During the 1970s, domestic duties became more politicized and the kitchen's function gradually changed from purely a place to cook to a place to discuss changes, ideas and revolution. With more people operating inside the kitchen, it continued to develop into an integrated part of the home. By then, the kitchen became a warm and inviting place for everyone living in the home and those who visit. Towards the end of the 20<sup>th</sup> century, the kitchen had completely turned into the center of family life.

At present, the new family structures/roles and cultural impacts have become important factors that influence the development of kitchen design. The kitchen is now a place to provide family and friends opportunities to gather for different activities. This is the reason that modern kitchen design tends to open up the kitchen to the rest of the house; in this way people can stay in the kitchen, dining



room or living room area and still be involved in events taking place in other areas of the home.

In the future, the role and structure of the family will continue to change, which will of course keep influencing our lifestyle in regard to cooking, eating and interaction. With the fast development of high technology and social media, kitchen workflow will be more and more efficient, and in the meantime the interactive experience will reach a new milestone.



Fig. 1-1-2 the development of the kitchen

## 1.2 The trends of kitchen activities

From the development of the kitchen over the centuries, we can learn that users' needs towards the function of the kitchen turned from basic food-related tasks like preparing, cooking, storing and handling food to more comprehensive activities

such as engaging with family members, communicating social status, entertaining or managing the household.

The trends of user needs on the functional side are: 1) The kitchen should be flexible and allow for improvisation as an area that can do many different things at the same time (not just cooking); 2) The advanced technology should make operation more simple, obvious and suitable; and 3) The design should be physical and cognitive friendly.

The trends on the emotional side of the kitchen are: 1) More active in regard to the interaction between family members and friends; 2) Communication with people in different ways with the support of high-tech and social media; and 3) Enhanced social and entertainment aspects.

The kitchen would become more and more open, with effective user experience when using the products in it and great interaction between people.

### **1.3 Activity centers in the kitchen**

In the kitchen, there are areas designated for different tasks, which can be sorted into user activity centers. Knowing the activity centers helps us to better understand the possible design of focused areas in the kitchen.

Traditionally, each kitchen has been organized according to the food-related function focus, and in most cases those activity centers will overlap: cleaning

center, preparation center, cooking center, tableware center, appliance space and storage space. Cleaning center: an area that functions as an area for cleaning up and trash collection. Usually this area is located around the sink. The main issue of this center is the sanitizing of a moist area, and the accessibility of accessories storage and the garbage can. Preparation center and cooking center: the workflow between these two centers is a very important issue. Effective workflow, good interaction with people and with products and efficient spacing are goals when considering arranging these two centers. Tableware center, appliance space and storage space: to maximize the function of those centers, great organization of objects and spaces is the key.

With the development of the kitchen, there are also non-food related activities showing up in the kitchen area. The kitchen could be considered as the social activities center, household management center, relaxation center and recreation center. This is where the idea originated that it could be interesting to embed some of the non-food related activities in the traditional food-related activity centers.

## 2.0 TARGET USERS

### 2.1 User behavior market research

From the research paper *kitchen activities of twenty-first century American households*, there are some intriguing insights that help us to further understand user behavior in kitchen activities.

Based on the research paper, different household types had different approaches towards food preparation activities. Single-person households did remarkable fewer food-related activities than household types with more people; for instance, 60% of the couple households and 49% of the family households often prepared foods from scratch or engaged in complicated activities such as baking or grilling, while only 32% of singles claim they do that very often.

Although the majority of households were preparing meals frequently, it was more common (67%) that only one person do most of the cooking job alone. And 32% of the samples reported that during the cooking activities, there were multiple cooks. However, only 13% of those who reported multiple cooks turned out actually cooking together.

Another interesting insight from the research is that 45% of the 750 survey participants used their kitchen for “multiple activities” including relaxing and recreation. While, 33% of respondents chose “cooking and eating only” and only

22% said they used kitchen for “cooking only.” Also, with 31%, the kitchen outpaced the living room (29%) as the room where people do important activities and spend most of their time. These data demonstrated the trends of the kitchen; it has become a new area with other functions embedded.

In addition to conversation and companionship, more formal entertaining also regularly takes place in the kitchen. 53% of respondents from households with a large kitchen indicated that they like to entertain; however, just 23% of people with a small kitchen enjoy these kinds of activities. In this case, the available activity space and workflow matters when talking about people entertaining together.

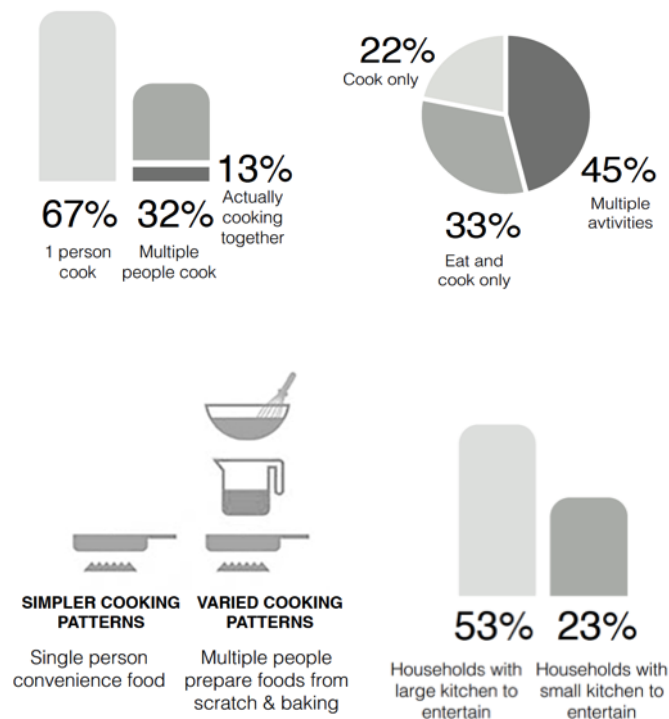


Fig. 2-1-1 research data

## **2.2 Target user group**

From the data on the research paper, there is one group of people who covers the most interesting insights: millennials. The target user of this project is set up to be a millennial between the ages of 20 and 35, who has just started a new life in an apartment in an urban or dense suburban area in the United States.

Millennials are confident and ambitious. They believe that there is no limit to what they can achieve and are willing to play an important role at their job to do meaningful works. As team players, millennials are loyally committed and want to be involved and included as part of the team.

Even with their passion for work, millennials are still considered family oriented. They prefer flexible working schedules and also care about the work/life balance with the goal of finding the blend of an enjoyable life with a fulfilling working environment.

Another characteristic of millennials is that they are more open-minded than their parents' generation. They are willing to try new things and be involved in the new experience that they never have before.

As they grew up in an era of electronic technology, most of the millennials are tech savvy. Compared to face-to-face contact, they are more used to

communicating via digital device or social media. In the meantime, most of them have passion for the emerging and new technologies.

Millennials have eco-consciousness, caring about making an effort to reduce energy and waste as much as possible. They aim to live a healthy lifestyle with organic food and constant exercise. However, sometimes they are uncertain of how to get involved with sustainability? and living healthy.

## **2.3 Dining habits**

There are some interesting insights that can be gleaned from the results of the survey *Millennial Passions: Food, Fashion, and Friends*. Millennials are twice as likely to prefer fresh and healthy food like farm-to-table and organic groceries than any other generation. They are open to try exotic and diverse food and love creative menu ideas. Millennials like cooking, and 64% of millennials consider themselves experts in the kitchen, which outpaced the figure of 52% of non-millennials. As they do a lot of dining with friends and family, millennials also enjoy the social aspect of food preparation and sharing.

## **2.4 Current situation in culinary experience**

In the study *Views Toward Nutrition And Healthful Eating Among Millennials*, millennials nowadays are facing some challenges eating more healthfully. Many

millennials reported that they would love to make an effort to eat more healthily, but most of them feel stuck because of a lack of knowledge about nutrition. In some cases, even they understand the importance connection between food and health, with their choice of food depending mainly on convenience and cost. Millennials love to eat together with friends and trust information that makes sense to them and that has worked for people they know.

In conclusion, the user needs are: 1) They need to learn and share culinary experience and nutrition knowledge with their friends or family through different ways; 2) The culinary process needed to be more convenient, efficient and in order, and the working area needed to be easily maintained and cleaned; and 3) Target users need a reason to cook, either for socializing with friends or enjoying the culinary experience.

## **2.5 User persona**

To better understand the target user, here are three user persona cases:

### **BRIAN**

AGE:23

RESIDENCE: Apartment in Boston, lives alone

OCCUPATION: Student

LIKES: Travel, photography



**LIFESTYLE:** Brian is a nutriology major student in Boston University. He cares about sustainability and tries to have healthy eating habits. However, often he thinks it is not worth to cook just for himself, so he often eats out. He has many friends, and always hangs out with them on weekends.

"I wish I could have some people eat together at my home, share food and have fun."

## **MARK**

**AGE:** 27

**RESIDENCE:** Apartment in Seattle, lives with his girlfriend

**OCCUPATION:** Programmer

**LIKES:** Technology, adventure

**LIFESTYLE:** Mark is a programmer at Microsoft. He is tech savvy and likes to try new things. His girlfriend usually handles the cooking, but he always wants to lend a hand. They often hang out with their friends on weekends.

"I wish I could help my girlfriend to cook."

## **KACY**

**AGE:** 33

**RESIDENCE:** Apartment in New York, lives with her husband and 7-year-old child

**OCCUPATION:** Graphic designer

LIKES: Shopping, cooking

LIFESTYLE: Kacy is a freelance graphic designer. Her schedule is flexible. She loves cooking and always cooks new things for her husband and daughter. She wants to teach her daughter how to cook.

**"I wish I have can teach and cook together with my daughter."**

### **3.0 DESIGN FOCUS AREA**

The focus area and main objective of this project is to design a new culinary experience for millennials to satisfy the functional needs of cooking and dining, and also the social need, which is gathering people together and make cooking and dining activities more socialized, interactive and joyful.

## **4.0 CULINARY EXPERIENCE**

### **4.1 The meaning of cooking**

There are different levels to the meaning of cooking. The most obvious one is preparing food, a process that transfers raw material into a safe, digestible, edible, healthy and delicious food by operating and combining ingredients, and in most cases applying heat. Cooking is also a great way to reset, making people intellectually very engaged and also able to find sensual pleasure. Moreover, cooking can bring culture to people. By transforming nature to culture, people make connections, communicate with each other, and create stories during cooking and enjoying the food. Last but not least, cooking is an experience of sharing and generosity, a form of entertainment and creativity for many people, and a collaborative act and team effort.

### **4.2 Benefits of cooking together**

Cooking, sharing and connecting are the most important factors. People tend to gather together for the culinary experience.

Functionally, first of all, cooking as a team can make the whole process be more efficient. Secondly, cooking together will give participants a chance to teach or learn from others to gain culinary skills and experience interesting food culture.

Also, cooking with friends and family can provide opportunities to learn and try new things and make healthy and nutritious choices.

On the other hand, emotionally, cooking with others can bring meaningful experiences through conversations and interactions to share information and feelings and at the same time strengthen the relationship. Moreover, cooking together is a way to slow down and appreciate the little moments of having fun and being joyful with others.

### **4.3 User activity experiment**

In order to find more insights about cooking together, I set up an experiment to have a culinary experience with my friends. I invited four friends to my apartment, and we decided to use the recipes from two of them, Guillermo and Yolegmma, to cook two meals: one large pizza and mini hamburgers for everybody.

To me, the most memorable moments of this experiment were our fun bonding experiences. We were not just giving a hand to one another with the cooking process, we also chatted with each other. Through the whole culinary experience, we learnt and shared cooking skills with the group and the teamwork made everything more efficient. The best part is we all got to try the food made with our efforts, which made eating very meaningful.



Fun bonding experience



Learn and share cooking skills



Teamwork, more efficient



Trying new food

Fig. 4-3-1 Pros on the experiment

However, there were still some problems during each step. First of all, since we had many people preparing food together, everybody ended up standing at different spots in the kitchen, which complicated communicate with each other and sometimes the spot that people standing blocked the way of others. Then, the cooking process of the two meals differed. Without efficient communication due to different cooking locations, we didn't get the meals ready to eat all together at the same time. What's more, not familiar with the other people's recipe and preparing process also lead to disorganized and hard to clean up.

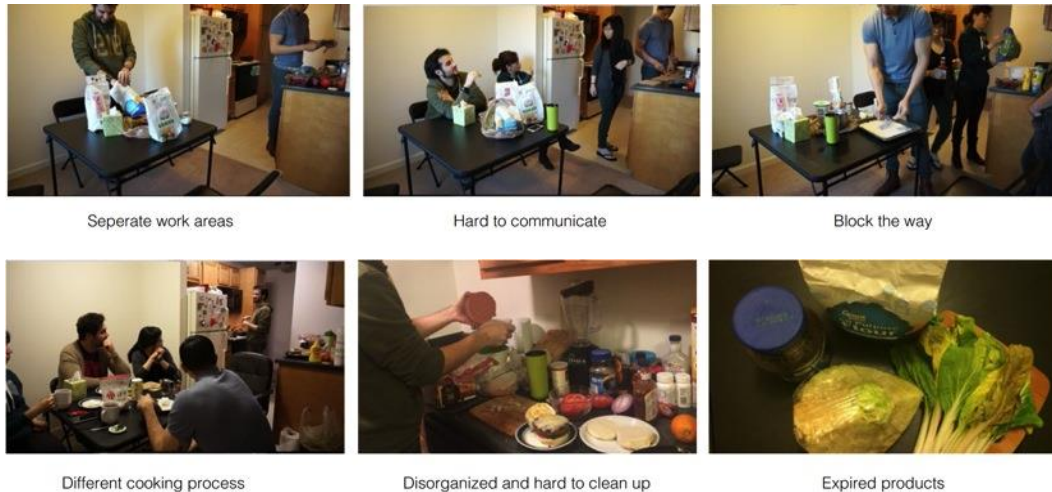


Fig. 4-3-1 Cons on the experiment

I also got interesting feedback from two of my friends, Guillermo and Yolegmma:

### **Guillermo Fok**

Age: 29 | RIT Student | Lives in an apartment in a suburb of Rochester

“I liked hanging out with my friends, and sharing my recipes and learning recipes with other people, splitting the work. I liked that it wasn’t my apartment so I didn’t need to clean. It was nice working together and eating, having that reward of eating others people’s food. However, I didn’t like the clutter and the organizing (I didn’t know where things were), the space was small, expired ingredients. But overall it was a good experience, I really enjoyed it and I wish we could do it more often.”

### **Yolegmma Marquez**

Age: 29 | RIT Student | Lives in an apartment in a suburb of Rochester

“I really liked the experience of cooking together with my friends. What I most enjoyed was waiting for other people's food, because nobody knows what the final result is going to be. Just having that expectation was really fun. I really liked being in a small place with good friends. It made me feel comfortable to talk and share, even private topics, and to have fun and just relax. But what I didn't like at all was the mess. We prepared different dishes, and it was disorganized for cooking. Everywhere there were plates and utensils and nobody was washing them. What could be improved is the circulation between people, like between those trying to help, to handle an ingredient or a tool for the person who is cooking. It would be nice to work as a team, and not leave someone alone cooking. I think this would improve the whole experience. But in general, it was positive.”

## **4.4 Learning from different cultures**

There are lots of different culinary cultures all around the world. Some of them tend to provide people more chance to communicate and bond, such as camping barbecue, hotpot, Korean BBQ, fondue, Teppanyaki, etc. It's obvious all of those share a common practice of people gathering together around the table or fire, cooking and dining at the same time. It provides a lot of benefits both on the functional side and on the emotional side of the whole experience.



## **5.0 DESIGN DEVELOPMENT**

### **5.1 Design Statement**

Based on the previous research, I found there are three breakthrough points to reach my objective of functionally and emotionally improving the culinary experience: 1) Improve the locations of culinary sites, explore possible ways of gathering people together to share the experience. 2) Improve the workflow and come up with a system that can make the culinary process more efficient. 3) Improve the interaction between users and between user and product to make the culinary experience more enjoyable.

### **5.2 Initial Concepts**

#### **CONCEPT1**

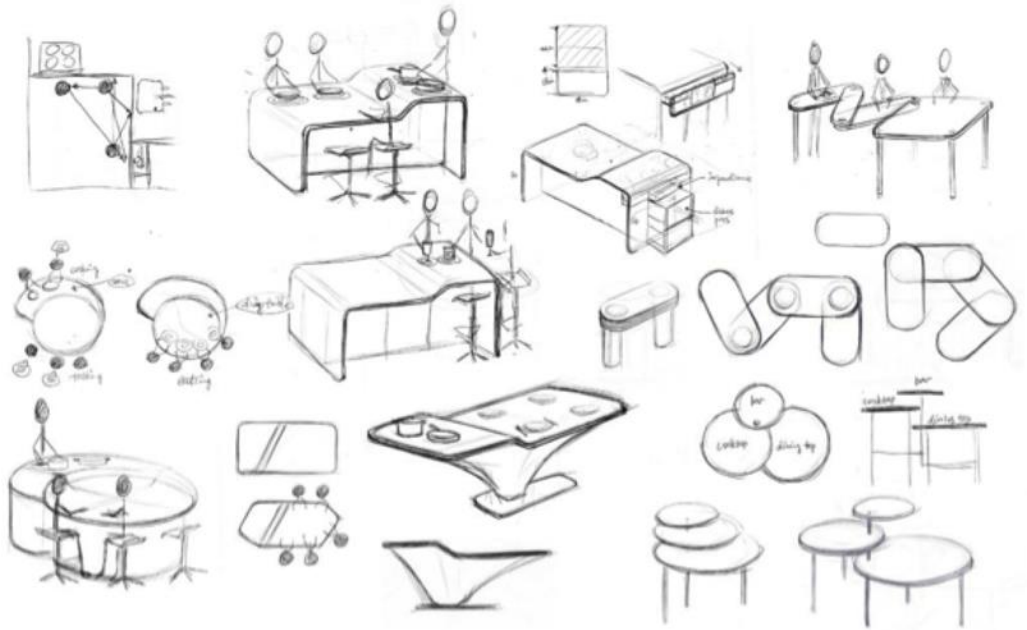


Fig. 5-2-1 Concept 1 sketches

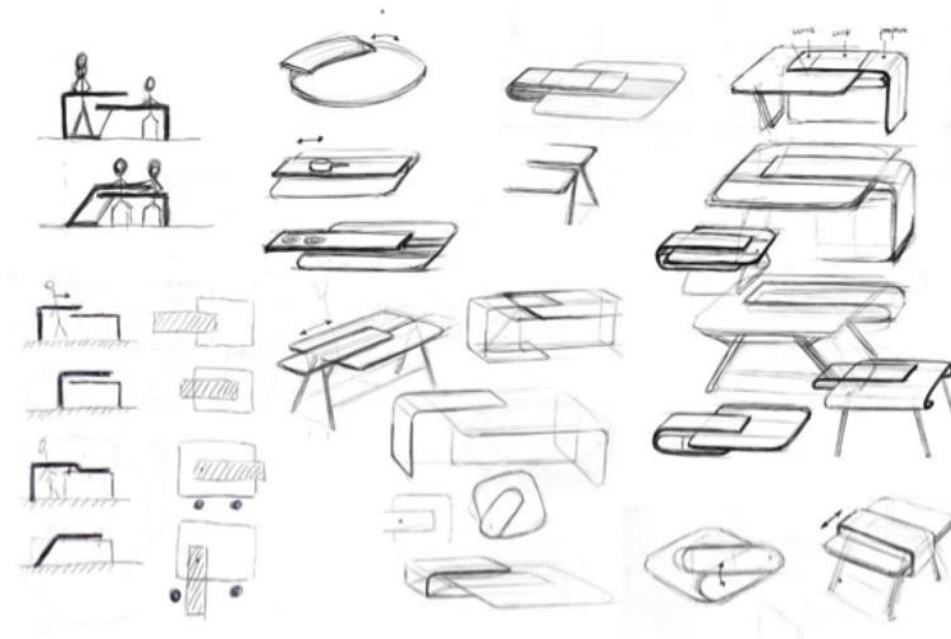


Fig. 5-2-2 Concept 1 sketches

- Gather people together in one area to make the culinary workflow more effective.

- Allow the cooks and the rest of the people could share the moment while cooking.
- No need to worry about the food getting cold and can eat everything fresh with the stove at the dining area.



Fig. 5-2-3 Concept1 mock-up

## CONCEPT 2

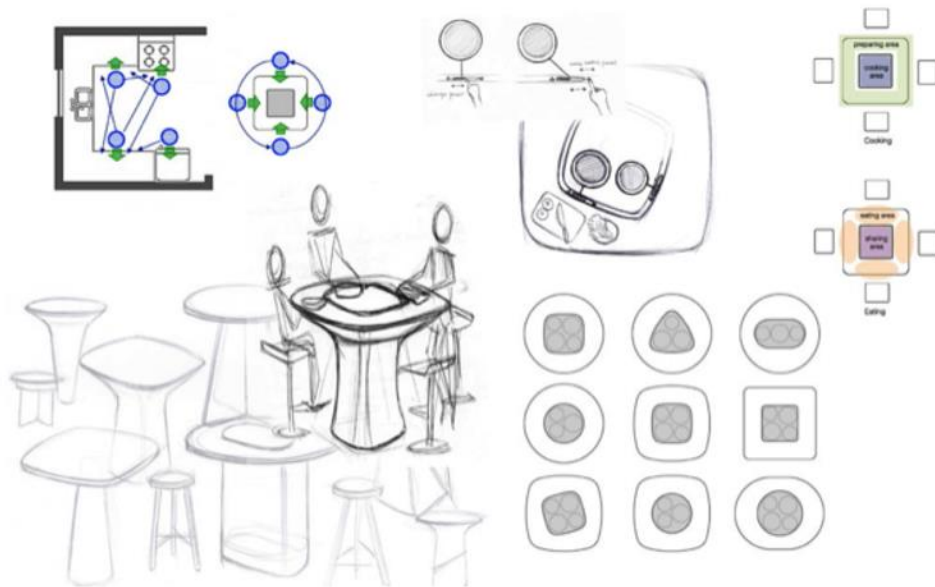


Fig. 5-2-4 Concept2 sketches

- Gather people around the table to have more interaction with each other.
- Give a culinary experience face to face to learn and share recipe with others.
- Offer an efficient way to organize teamwork.
- Provide the option of doing the cooking while eating.



Fig. 5-2-5 Concept2 mock-up

### Concept 3

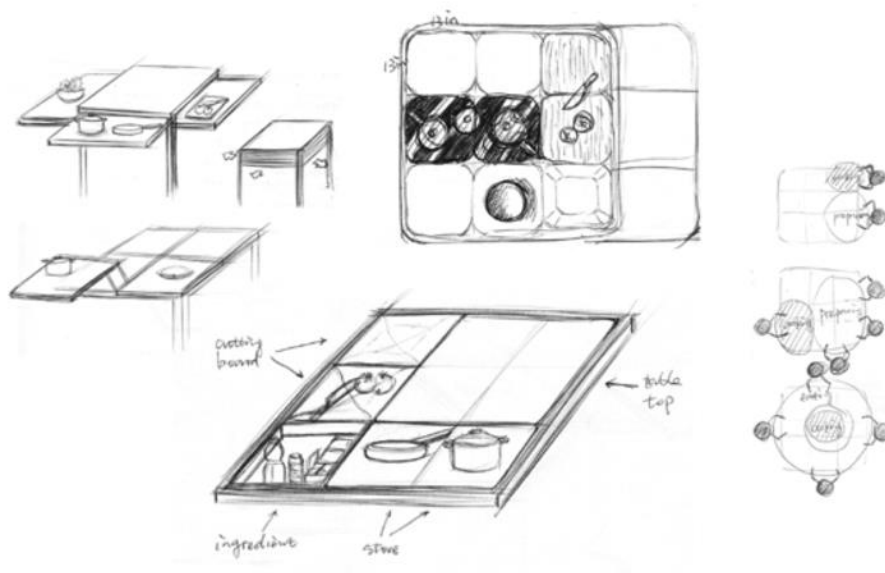


Fig. 5-2-6 Concept3 sketches

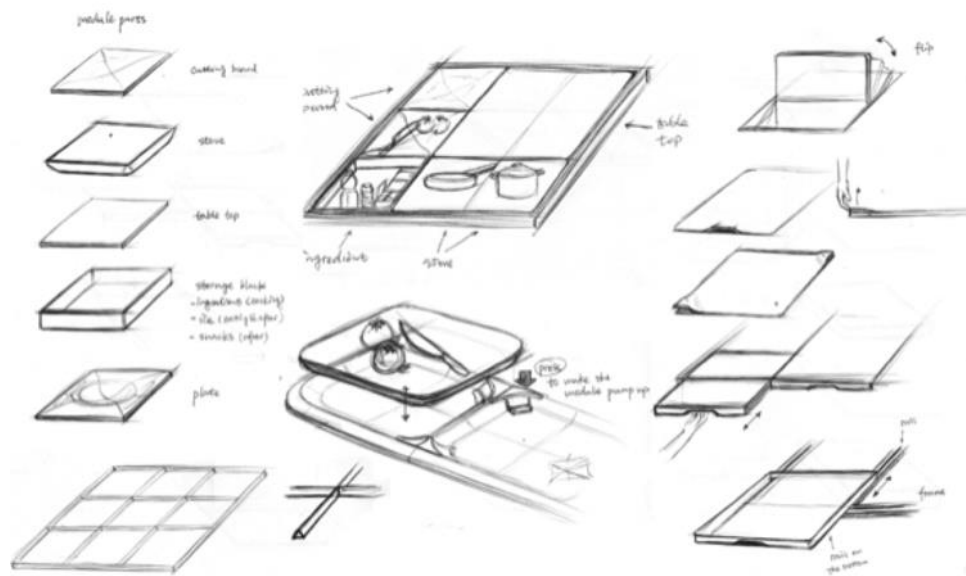


Fig. 5-2-7 Concept3 sketches

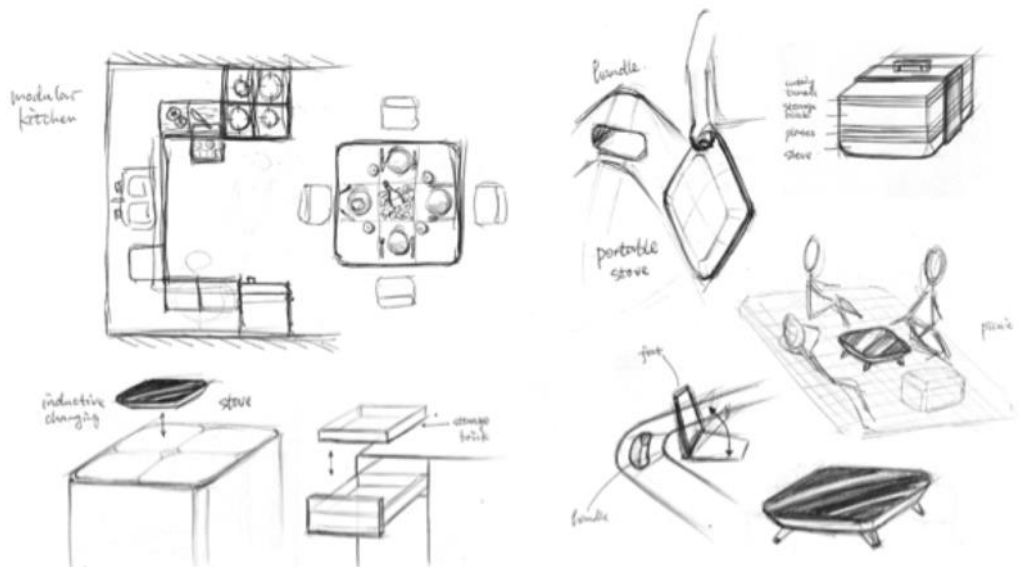


Fig. 5-2-8 Concept3 sketches

- Satisfy users' different needs in regard to cooking with the modular system
- Provide a customized set up and workflow for different user scenarios.

- Combine the benefits of both concept 1 and concept 2.

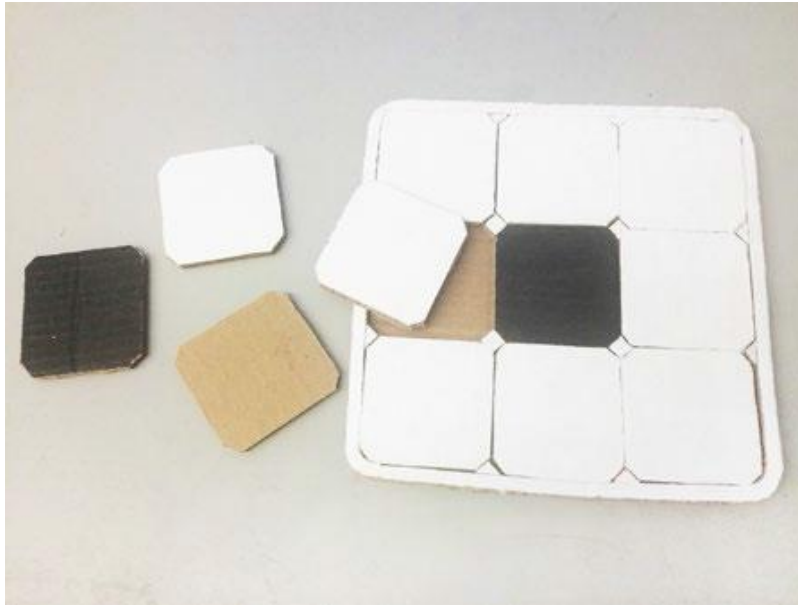


Fig. 5-2-9 Concept3 mock-up

### **5.3 Full-size mock-up and User test**

After playing with the 3D mock-ups, I planned to build a full-size mock-up to do another experiment for the user test. I invited some of my friends to come to my apartment to cook and eat.



Fig. 5-3-1 Full-size mock-up

During the cooking session, with everybody standing around the product, we had great interactions, and nobody needed to turn around to find and talk with others.

This product was also a benefit for the teamwork: under the command of the chief, everything became really orderly. And after cooking, we gathered around the table and ate together with accomplishment and so many good memories.



BEFORE





AFTER

Fig. 5-3-2 UX experiment

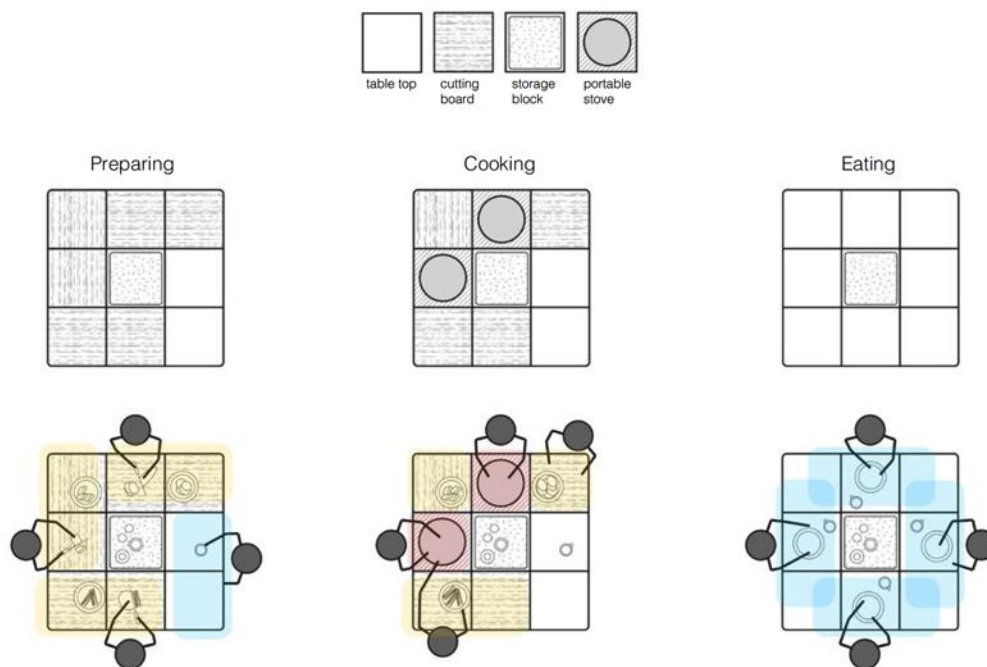


Fig. 5-3-3 UX workflow

Here is the feedback from two of my friends who participated, Zhuo and Longxi:

**Zhuo Wang**

Age: 25 | RIT Student | Lives in an apartment in a suburb of Rochester



“I liked this culinary experience. Instead of letting one person cook for everybody, we prepared food together, which is more interesting and efficient to me. We communicated with each other easily, and I learned and tried some new recipes from others. I saw more possibilities that people can cook and eat and interact together by using this table. People can eat while cooking, like when doing barbecue. I enjoyed this new culinary experience a lot.”

### **Longxi Fu**

Age: 24 | RIT Student | Lives in an apartment in a suburb of Rochester

“I’m really good at cooking. When my friends want to eat at home together, I usually take charge of cooking by myself. Usually while I’m cooking in the kitchen, my friends just gather around the dining table and talk and wait for me. I felt left out. I think this culinary experience helped me a lot. All of us gathered together around the table and cooked and talked. I asked my friends help me to do some preparation. The teamwork made the whole process much more efficient and more fun. But I think after cutting things, it is not convenient that there is nowhere that I can throw the waste away.”

## **5.4 Concept development**

Then, I started the CAD model to develop the operation details.



Fig. 5-4-1 CAD models

In order to see if those details worked as I thought it would be, I built a full-size functional mock-up.



Fig. 5-4-2 User scenarios

The workflow worked really well in different user scenarios.



Fig. 5-4-3 Operation details

However, when started testing the usability of setting up for different user scenarios, problems showed up. First, the process of changing the modular parts was not ergonomic friendly. Secondly, moving many modules added extra steps. Last but not least, gaps between each module lead to clean up issues. After carefully consideration, I decided to simplify the set up process and reduce the gaps between modules.

## 5.5 Technology support

The burner top is an induction stove using the induction charging technology.

Induction chargers typically use an induction coil to create an alternating electromagnetic field from within a charging base station, and a second induction

coil in the portable device takes power from the electromagnetic field and converts it back into electrical current to charge the battery. The two induction coils in proximity combine to form an electrical transformer.

The induction charging is fast, energy efficient, safe to use and easy to clean. It features multiple settings that make it easy to serve food at the ideal temperature.

You can use it as a stylish, elegant centerpiece on the table, for outdoor parties and in the kitchen as an extra cooking zone. It could last at least 2 hours, depends on the fire power that you use.



Fig. 5-5-1 Burner top UI

## 5.6 Final design

I went back to rethink the details in Concept2 and realized that the round shape semantically reduces the distance between people and gathers them together, at the same time it was simple to operate and easy to keep clean. So, I kept the

modular feature from Concept3 and considered the round shape from Concept, came up with the final design.



Fig. 5-6-1 Final design



Fig. 5-6-2 Final design

“A-Round” is a modular culinary table that can satisfy user’s specific needs in regard to different social aspects by changing the elements of the middle part of the table (burner top, storage tray, serving tray, table top, etc.). The round shape semantically reduces the distance between people and gathers them together. By changing behaviors of users and offering resources around the dining area, this product not only functionally improves the culinary process, but also emotionally enhances the cooking and dining experience.

## 5.7 Full size mock-up and user scenarios



Fig. 5-7-1 Operation details



Fig. 5-7-2 User scenarios

The transition between each activity is very easy to operate.

## 6.0 CONCLUSION

By rearranging the layout and workflow of culinary process, the A-Round social table design solved the problems that people cannot communicate and share the experience well during cooking. At the same time, the modular design provided more features like party set-up and dining set-up based on users' specific needs. Also, the appearance design not only looks simple and appealing, but also is functionally easy to cleanup.

From the previous user experience test, I found there are still some interesting areas that worth developing. First, there is great potential in customized modular design that could provide features for more user scenarios. Secondly, the detailed design of the storage or housing of the accessories might need to be further considered.

Overall, the A-Round social table design reached the goal of bringing users a new culinary experience to gather people together and make the cooking and dining activities more socialized, interactive and joyful.



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